

## $^{99m}\text{Tc}$ -세스타미비 심근관류스캔상 역재분포형부위의 임상적 특성

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### Clinical Characterization of Reverse Redistribution Pattern in $^{99m}\text{Tc}$ -Sestamibi Myocardial Perfusion Scan

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#### ABSTRACT

**Background and Objectives :** Reverse redistribution pattern (RRP), that is defined as the worsening of the perfusion defect at rest image, can be observed in  $^{99m}\text{Tc}$ -sestamibi (methoxy isobutyl isonitrile) myocardial scan with standard stress-rest protocol. This study was prepared to evaluate the prevalence and clinical characteristics of RRP in stress  $^{99m}\text{Tc}$ -sestamibi myocardial scan. **Materials and Methods :** We retrospectively reviewed 1304 images of  $^{99m}\text{Tc}$ -sestamibi myocardial perfusion scan performed between January 1995 and June 1997, and scintigraphic findings were compared with clinical and angiographic data. **Results :** The prevalence of RRP was 5.2% (68 of 1,304). RRP was noted in 6.0% (41 of 679) of the adenosine study and 4.3% (27 of 625) of the exercise study. The mean coronary artery stenosis at RRP territory was  $51.5 \pm 38.9\%$ . However, normal coronary artery at RRP territory was noted in 45.8% (11 of 24). There was no significant differences in luminal narrowing of coronary arteries, TIMI flow grade and LV wall motion between the patient with RRP positive and RRP negative at the infarct related artery territory. **Conclusion :** Reverse redistribution pattern on  $^{99m}\text{Tc}$ -sestamibi myocardial SPECT does not seem to indicate the presence of significant coronary artery disease or patency of the infarct related arteries in the patients with acute MI. (Korean Circulation J 1999;29(5):459-464)

**KEY WORDS :** Reverse redistribution pattern ·  $^{99m}\text{Tc}$ -sestamibi myocardial perfusion scan.

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(quantitative coronary angiography, QCA)

Student's t-test ,  
Chi-square test p 0.05

## 결 과

<sup>99m</sup>Tc-MIBI 심근관류스캔상 RRP의 빈도

<sup>99m</sup>Tc-MIBI RRP 5.2%(1,304  
68 ) . Adenosine (6.0%)  
(4.3%) RRP가 가

(Table 1). RRP

( 44.1%  
47.1%) (8.8%)

(Table 2).

<sup>99m</sup>Tc-MIBI 심근관류스캔상 RRP 영역의 관동맥협착도

<sup>99m</sup>Tc-MIBI RRP 68  
(Fig. 1)24  
14 , 7 , 3 .  
RRP 50%  
가 11 (45.8%), 50 99%  
9 (37.5%), 4

**Table 1.** Prevalence of reverse redistribution pattern in <sup>99m</sup>Tc-MIBI myocardial perfusion scan

		RRP ( + )	RRP ( - )	p value
MIBI ( n = 1304)		68 (5.2%)	1,236 (94.8%)	<0.001
Age	57.0 ± 10.9	58.7 ± 10.8	56.5 ± 10.9	NS
Sex male	733	39 (5.3%)	694 (94.7%)	NS
female	571	29 (5.0%)	542 (95.0%)	
Stress mode				NS
exercise	625	27 (4.3%)	598 (95.7%)	
adenosine	679	41 (6.0%)	487 (94.0%)	

RR ; Reverse redistribution, RRP ; Reverse redistribution pattern, NS ; not significantly different

**Table 2.** Distribution of RRP by coronary artery territory in <sup>99m</sup>Tc-MIBI myocardial perfusion scan

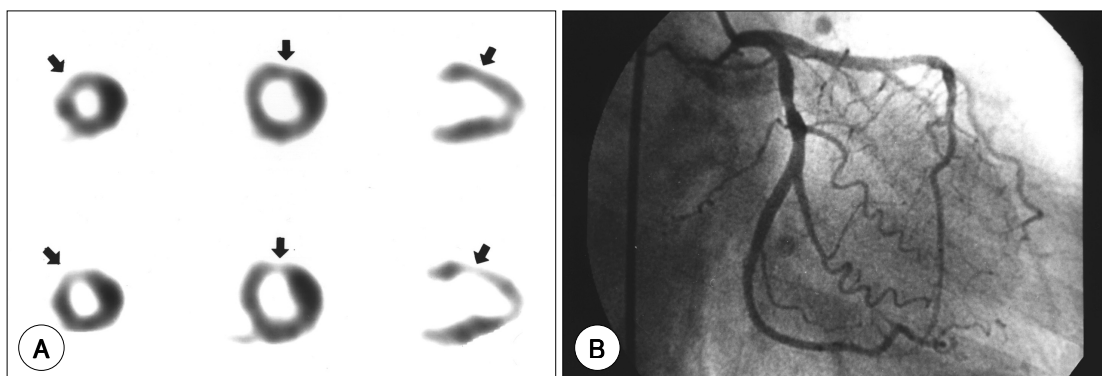
RRP site (territory)	n = 68
Left anterior descending artery	30 (44.1%)
Left circumflex artery	6 ( 8.8%)
Right coronary artery	32 (47.1%)

RRP ; Reverse redistribution pattern

**Table 3.** Coronary angiographic findings of the patients with RRP in <sup>99m</sup>Tc-MIBI myocardial perfusion scan

Diagnosis	Angiographic finding at RRP site , n = 24			
	<50% stenosis	50 - 99% stenosis	100% stenosis	mean% stenosis
Myocardial infarction	6	7	1	63.6 ± 32.5
Angina	2	2	3	45.7 ± 46.1
Atypical chest pain	3	0	0	8.3 ± 14.4
	11 (45.8%)	9 (37.5%)	4 (16.7%)	51.5 ± 38.9

RRP ; Reverse redistribution pattern



**Fig. 1.** <sup>99m</sup>Tc-MIBI myocardial scintigraphic (A) and angiographic finding (B) of 62 year old female patient with unstable angina showed no significant coronary artery stenosis at left anterior descending artery in which territory reverse redistribution pattern was found.

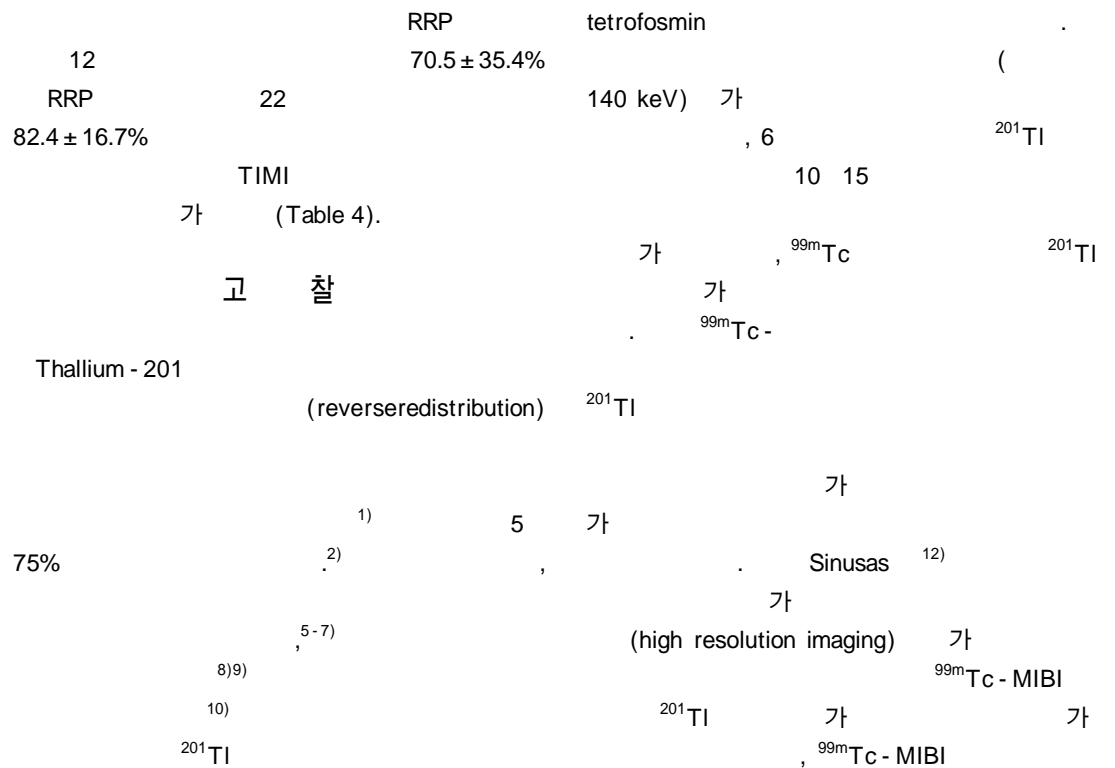
**Table 4.** Angiographic findings of the patients with acute MI who showed RRP at infarct related artery in  $^{99m}\text{Tc}$ -MIBI myocardial perfusion scan

	RRP (+) at IRA (n = 12)	RRP (-) at IRA (n = 22)	p value
Age	54.4 ± 14.4	55.3 ± 10.4	NS
Male / Female	10 / 2	19 / 3	NS
Q MI / Non-Q MI	8 / 4	15 / 7	NS
MI site ant / post / inf	9 / 1 / 2	14 / 1 / 7	NS
IRA, LAD / LCX / RCA	9 / 1 / 2	14 / 3 / 5	NS
Thrombolytic therapy			
UK / tPA / None	1 / 1 / 10	7 / 0 / 15	NS
IRA stenosis (%)	70.5 ± 35.4	82.4 ± 16.7	NS
TIMI flow			
0 / 1 / 2 / 3	2 / 1 / 5 / 4	4 / 3 / 12 / 3	NS
Infarct site wall motion			
N / H / A / D	2 / 2 / 6 / 2	4 / 5 / 12 / 1	NS

RRP ; Reverse redistribution pattern, IRA ; Infarct Related Artery, MI ; Myocardial Infarction, N / H / A / D ; Normal / Hypokinesia / Akinesia /Dyskinesia

(16.7%) 51.5 ± 38.9% (Table 3).

급성심근경색환자에서 경색혈관영역에 RRP를 보인 군과 RRP를 보이지 않는 군의 관동맥조영술과 좌심실촬영술소견



<sup>99m</sup>Tc - MIBI RRP 12.4%(999  
 Takeishi <sup>13)</sup> <sup>201</sup>Tl RR  
 (direct PT - CA) 가 Kao <sup>14)</sup> 가 .  
 24 , ,  
 (high resolution collimator) <sup>99m</sup>Tc - MIBI RRP  
 1 .  
 3 ( ) RRP 가  
 (15 ) 1 가 RRP  
<sup>99m</sup>Tc - MIBI 가  
<sup>201</sup>Tl RR .  
 가 <sup>99m</sup>Tc - MIBI 가 ,  
 , 가  
 가 RRP가 ,  
<sup>99m</sup>Tc - MIBI RRP 5.2% adenosine  
<sup>201</sup>Tl (6.0%) (4.3%) RRP  
 가 RRP가 45.8%  
<sup>201</sup>Tl RRP가  
 가 RRP  
 (reverse , TIMI , 가  
 redistribution, RR) <sup>99m</sup>Tc - MIBI .  
 (reverse redistribution pattern, RRP) <sup>99m</sup>Tc - MIBI 가  
 RRP 가 <sup>13)</sup>16 - 18)  
 . Kao RRP  
<sup>14)</sup> MIBI RRP  
 RRP (30/540,  
 5.6%) <sup>201</sup>Tl RR (21/300, 7.0%)  
 RRP  
 (53.3%), (46.7%)  
 RRP가 RRP  
 87%가 (50% )  
 RRP가  
 . Song <sup>15)</sup>

## 요 약

서 론 :

(reverse redistribution pattern, RRP)  
 - <sup>99m</sup>Tc - MIBI

RRP

가

재료 및 방법 :

1995 1 1997 6 1304

<sup>99m</sup>Tc - MIBI

결 과 :

adenosine 6.0%(679

41 ), 4.3%(625 27 )

5.2%(1,304 68 )

51.5 ± 38.9% ,

45.8%

, TIMI ,

가

결 론 :

<sup>99m</sup>Tc - MIBI

중심 단어 : <sup>99m</sup>Tc - sestamibi

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